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IS 4046-1 (1981): Gent's Cotton Rib-Knitted Briefs - Part I
: 1 x 1, 2 Ply Rib-Knitted [TXD 10: Hosiery]



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“Knowledge is such a treasure which cannot be stolen”

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IS : 4046 (Part I) - 1981

(Reaffirmed 1999)

Indian Standard
SPECIFICATION FOR
GENT'S COTTON RIB-KNITTED BRIEFS
PART I 1x1, 2 PLY RIB-KNITTED
(*Second Revision*)

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Indian Standard
SPECIFICATION FOR
GENT'S COTTON RIB-KNITTED BRIEFS
PART I 1×1, 2 PLY RIB-KNITTED
(Second Revision)

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Indian Standard
SPECIFICATION FOR
GENT'S COTTON RIB-KNITTED BRIEFS
PART I 1×1, 2 PLY RIB-KNITTED
(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Part I) (Second Revision) was adopted by the Indian Standards Institution on 10 July 1981, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was published in 1961 and was first revised in 1977. In this revision, the standard was split into parts to cover the requirements of briefs made from different types of knitted fabrics. Part I of the standard covers briefs made from 1×1, 2 ply rib-knitted fabric. The dimensions of briefs have been modified on the basis of consumer trials to provide a better fit. The standard now covers dyed briefs also. This opportunity has also been availed to specify different values for dimensional change due to relaxation along the wales and courses.

0.3 Briefs are tight-fitting underwear without leg portions. These are also known as *CHADDI* or *JANGHIA*.

0.4 A code of bleaching and processing of cotton knitted fabrics is under preparation, which would serve as a guide to small processors in the proper bleaching of cotton knitted goods.

0.5 To familiarize the industry with International System of Units (SI Units), the basic SI Units as well as the recommended SI Units for use in the textile industry are given in Appendix B.

0.5.1 Standards of Weights and Measures Act 1976 also stipulates use of SI Units.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (revised).

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1. SCOPE

1.1 This standard (Part I) prescribes the constructional details and other particulars of scored, bleached or dyed cotton rib-knitted briefs. Rib-knitted fabric shall be 1×1 with two threads to a feeder commonly known as double ribbed.

1.2 This standard does not prescribe the general appearance, shape, lustre, shade and feel of the briefs (*see also 4.4*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions as given in IS : 3596-1967* shall apply.

3. MANUFACTURE

3.1 A typical shape of a brief is shown in Fig. 1. Generally the briefs are made of a number of fabric pieces, depending on the design, and may have double flaps (one covered with the other) with suitable front opening.

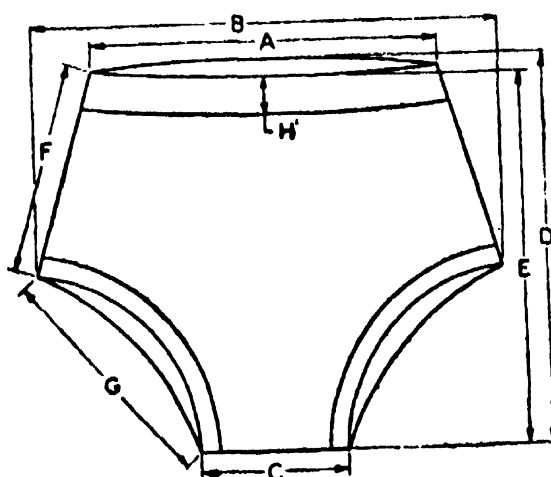


FIG. 1 TYPICAL SHAPE OF A BRIEF

3.2 Elastic Straps

3.2.1 The brief shall have a woven elastic strap (conforming to IS : 9686-1980†) stitched at the waist band. Braided elastic straps at thigh openings may also be provided if required by the buyer.

*Glossary of terms relating to hosiery.

†Specification for elastic tape.

3.3 Seams and Stitches

3.3.1 For stitching various portions of briefs, the type of stitches and count of sewing thread shall be as given in Table 1. The sewing thread shall conform to IS : 1720-1978*.

TABLE 1 SEAMS AND STITCHES

| PORTION TO BE STITCHED (1) | TYPE OF STITCH (2) | COUNT OF SEWING THREAD | |
|---|------------------------------------|--|--|
| | | In Needle(s) (3) | In Loper(s) (4) |
| Joining at the seat and side seams | Overlock covered by flatlock | Three strands of 60s/3 (100 dtex × 3) | Two strands of 40s/2 (145 dtex × 2) |
| Thigh opening (see Note below) | Flatlock having folding attachment | Three strands of 60s/3 (100 dtex × 3) | Two strands of 40s/2 (145 dtex × 2) |
| Joining of elastic straps to waist band | Flatlock | Three strands of 60s/3 (100 dtex × 3) | Two strands of 40s/2 (145 dtex × 2) |

NOTE — Front stitching shall be done by overlock covered by flatlock or by flatlock stitch with folder attachment or a tape attachment with the help of 2-needle chain stitching machine, as per the design agreed to between the buyer and the seller.

3.4 **Freedom from Defects** — The briefs shall be free from manufacturing defects such as large mends, ladders, dropped stitches, holes, cuts, missed stitches, defective stitching, uneven dyeing, stains, etc, or any other defect which may significantly mar the appearance or serviceability.

4. REQUIREMENTS

4.1 **Fabric** — The briefs shall be tailored out of well and evenly knitted 1 × 1, two-ply ribbed cotton fabric. The fabric shall be scoured, bleached or dyed. Constructional particulars of fabric shall be as under:

| <i>Gauge of the Machine</i> | <i>Approx Count of Yarn</i> | <i>Wales/dm Min</i> | <i>Courses/dm Min</i> |
|-----------------------------|-----------------------------|---------------------|-----------------------|
| 14 | 40s | 94 | 126 |

4.2 **Dimensions** — The dimensions of briefs for different sizes, when measured by the method prescribed in A-2, shall conform to the requirements of Table 2.

*Specification for cotton sewing threads (second revision).

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4.2.1 The size of the brief is fixed according to the hip measurement of the wearer, for example, 85 size briefs are meant for wearers having hip measurement of 85 cm.

TABLE 2 DIMENSIONS OF BRIEFS

(Clause 4.2, and Fig. 1)

All dimensions in centimetres.

| SIZE | WIDTH ACROSS WAIST | WIDTH ACROSS SEAT (HIP) | CROTCH LENGTH* (WIDTH AT BOTTOM) | BACK LENGTH* | FRONT LENGTH* | SIDE LENGTH* | THIGH OPEN- ING* | WIDTH OF STRAP |
|-------------------|--------------------------|------------------------------------|---|-----------------|------------------|-----------------|------------------------|----------------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | <i>A</i> | <i>B</i> | <i>C</i> | <i>D</i> | <i>E</i> | <i>F</i> | <i>G</i> | <i>H</i> |
| 70 | 25.5 | 30 | 11 | 25 | 24 | 14 | 18 | } 3.2 |
| 75 | 27 | 32 | 12 | 27 | 26 | 15 | 19 | |
| 80 | 28.5 | 34 | 13 | 29 | 28 | 16 | 20 | |
| 85 | 30 | 36 | 14 | 31 | 30 | 17 | 22 | |
| 90 | 32 | 38 | 15 | 33 | 32 | 18 | 24 | |
| 95 | 33.5 | 40 | 16 | 35 | 34 | 19 | 26 | |
| 100 | 35 | 42 | 17 | 36 | 35 | 20 | 28 | |
| 105 | 36.5 | 43.5 | 18 | 37 | 36 | 21 | 30 | |
| 110 | 38 | 45 | 19 | 38 | 37 | 22 | 32 | |
| TOLERANCE ± 2 | | ± 1.5 | ± 1 | ± 1.5 | ± 1.5 | ± 1 | ± 1 | ± 0.3 |

*These dimensions may be varied if desired by the buyer; however, these shall be subject to the tolerance specified.

4.3 The briefs or the fabric used for the manufacture of briefs shall conform to the requirements given in Table 3.

4.4 Sealed Sample — In case a sample has been agreed upon and sealed to illustrate or specify the indeterminable characteristics, such as general appearance, lustre, shade and feel of briefs, the supply shall be in conformity with the sample in such respects.

4.4.1 Custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

TABLE 3 REQUIREMENTS OF BRIEFS
(Clause 4.3)

| Sl No. | CHARACTERISTIC | REQUIREMENT | METHOD OF TEST REF TO |
|--------|---|-------------|------------------------------------|
| (1) | (2) | (3) | (4) |
| i) | Dimensional change due to relaxation, percent, <i>Max</i> | | A-3 |
| | a) Wales | 5 | |
| | b) Courses | 10 | |
| ii) | Scouring loss, percent, <i>Max</i> | 2 | IS : 1383-1977* (mild method) |
| iii) | pH value of aqueous extract | 6 - 10 | IS : 1390-1961† |
| iv) | Colour fastness of dyed briefs (see Note) | | |
| | a) Light | 4 or better | IS : 2454-1967‡ |
| | b) Washing (Test 2) | 4 or better | IS : 3361-1965§ |
| | c) Perspiration | 4 or better | IS : 971-1956 |

NOTE — Dyestuffs other than direct dyes shall be used which would give the specified colour fastness.

*Scouring loss in grey and finished cotton textile materials (*first revision*).

†pH value of aqueous extracts of textile materials.

‡Colour fastness of textile materials to artificial light (xenon lamp).

§Colour fastness of textile materials to washing : Test 2.

||Colour fastness of textile materials to perspiration.

5. MARKING

5.1 A suitable cloth label shall be securely attached to each brief at the inside near the waist band on which the following shall be indicated:

- a) Size; and
- b) Manufacturer's name, initials or trade-mark.

5.1.1 The briefs may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the rules and regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PACKING

6.1 The briefs shall be packed in bales or cases in accordance with IS : 3086-1965* or IS : 3325-1965† as the case may be.

*Code for seaworthy packaging of cotton hosiery yarn and goods.

†Code for inland packaging of cotton hosiery yarn and goods.

7. SAMPLING AND CRITERIA FOR CONFORMITY

7.0 The sampling procedure detailed in 7.1 to 7.3 shall give desired protection to the buyer and the seller, provided the lot submitted for inspection is homogeneous. To achieve this, the manufacturer shall maintain a system of process control at all stages of manufacture, ensuring that briefs tendered by him for inspection comply with the requirements of this standard in all respects.

NOTE — For effective process control, the use of statistical quality control techniques is recommended and helpful guidance may be obtained in this respect from IS : 397 (Part I) - 1972*.

7.1 All the briefs of the same size delivered to a buyer against one despatch note shall constitute a lot.

7.1.1 The conformity of a lot to the requirements of this specification shall be determined on the basis of the tests carried out on the samples selected from the lot.

7.2 Unless otherwise agreed to between the buyer and the seller, a number of briefs depending upon the size of the lot shall be selected at random from the lot to constitute the gross sample. The number of briefs so selected shall be in accordance with col 2 of Table 4.

TABLE 4 SAMPLE SIZE AND PERMISSIBLE NUMBER OF NON-CONFORMING BRIEFS

| NUMBER OF BRIEFS IN THE LOT | FOR DIMENSIONS AND VISUAL INSPECTION | | NUMBER OF BRIEFS TO BE TESTED FOR CHEMICAL CHARACTERISTICS |
|--------------------------------|--------------------------------------|---|---|
| | Number of Briefs to be Inspected | Permissible Number of Non-conforming Briefs | |
| (1) | (2) | (3) | (4) |
| Up to 300 | 13 | 1 | 3 |
| 301 to 500 | 20 | 2 | 5 |
| 501 to 1 000 | 32 | 3 | 5 |
| 1 001 and above | 50 | 5 | 8 |

7.3 The number of briefs to be tested and criteria for conformity for each of the characteristics shall be as follows:

| <i>Characteristic</i> | <i>Number of Briefs to be Tested</i> | <i>Criterion for Conformity</i> |
|--|--------------------------------------|---|
| Visual inspection and dimensions | See col 2 of Table 4 | Non-conforming briefs shall not exceed the corresponding number given in col 3 of Table 4 |
| Dimensional change, scouring loss, pH values and colour fastness | See col 4 of Table 4 | All the briefs shall satisfy the relevant requirements |

*Method for statistical quality control during production: Part I Control charts for variables (*first revision*).

APPENDIX A
(*Clause 4.2, and Table 3*)

METHOD OF TEST

**A-1. CONDITIONING OF TEST SPECIMENS AND
ATMOSPHERIC CONDITIONS FOR TESTING**

A-1.1 The test specimens shall be tested in prevailing atmospheric conditions. In case of dispute, the samples shall be conditioned and tested in the standard atmospheric conditions as given in IS : 6359-1971*.

A-2. DIMENSIONS

A-2.1 Procedure — Take each brief constituting the test sample. Lay it flat on a table. Remove by hand all creases and wrinkles without distorting it. Measure correct to the nearest 0.5 cm the dimensions given in Table 2.

A-3. DIMENSIONAL CHANGE (DUE TO RELAXATION)

A-3.1 Marking of Test Specimens

A-3.1.1 Cut from each brief a test specimen measuring approximately 20 × 20 cm in such a way that two of its sides are parallel in the direction of wales and the other two parallel in the direction of courses. Mark the directions of wales and courses in the test specimen.

A-3.1.2 Mark centrally on the test specimen by means of indelible ink or a fast dyed cotton sewing thread an area 15 × 15 cm with two of its sides in the direction of wales and the other two in the direction of courses. Spread this test specimen on a flat smooth surface and carefully remove by hand all creases and wrinkles. Within this area, mark six pairs of marks, three pairs each in the wales direction and the courses direction in such a way that the distance between each pair of marks is the same.

A-3.2 Procedure

A-3.2.1 Place the test specimen on a glass plate, carefully remove by hand all creases and wrinkles without distorting it and place another glass plate on the test specimen. Measure, correct to the nearest millimetre, the distance between each pair of marks separately.

*Method for conditioning of textiles.

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A-3.2.2 Lay the test specimen flat in a tray of suitable size having depth of 10 cm *Min* and soak the specimen under a head of 25 mm of water containing 0.5 percent suitable wetting agent at room temperature for 2 hours. Drain out the water and remove the test specimen carefully, so that it is not stretched. Lay the specimen flat on a smooth surface, remove the excess water by absorbent material and dry it at room temperature.

A-3.2.3 After drying, condition the test specimen to moisture equilibrium at room temperature. Place it on the glass plate, carefully remove all wrinkles and creases and place another glass plate on the test specimen. Measure correct to the nearest millimetre, the distance between each pair of marks separately.

A-3.3 Calculation

A-3.3.1 Calculate separately the percentage of dimensional change between all the pairs of marks both in the direction of wales and courses by the following formula:

$$S = \frac{100 \times (a - b)}{a}$$

where

S = dimensional change, percent;

a = the distance between a pair of marks (along the wales or courses as the case may be) before soaking; and

b = the distance between the same pair of marks after soaking.

A-3.3.2 Calculate the average dimensional change in each direction.

APPENDIX B

(Clause 0.5)

RECOMMENDED SI UNITS FOR TEXTILES

| Sl. No. | CHARACTERISTIC | SI UNITS | | APPLICATION | |
|---------|----------------------------|------------------------|---|---|--------------------------|
| | | Unit(s) | Abbreviation(s) | | |
| (1) | (2) | (3) | (4) | (5) | |
| 1. | Length | Millimetre | mm | Fibres Samples, test specimens (as appropriate) Yarns, ropes, cordages, fabrics | |
| | | Millimetre, centimetre | mm, cm | | |
| | | Metre | m | | |
| 2. | Width | Millimetre | mm | Narrow fabrics Other fabrics Samples, test specimen (as appropriate) Carpets, druggets, durries (as appropriate) | |
| | | Centimetre | cm | | |
| | | Millimetre, centimetre | mm, cm | | |
| | | Centimetre, metre. | cm, m | | |
| 3. | Thickness | Micrometre (micron) | μm | Delicate fabrics Other fabrics, carpets felts | |
| | | Millimetre | mm | | |
| 4. | Linear-density | Tex | tex | Yarns Fibres Filaments filament yarns Slivers, rope | |
| | | Millitex | mtex | | |
| | | Decitex | dtex | | |
| | | Kilotex | ktex | | |
| 5. | Diameter | Micrometre (micron) | μm | Fibres Yarns, ropes, cordages | |
| | | Millimetre | mm | | |
| 6. | Circumference | Millimetre | mm | Ropes, cordages | |
| 7. | Threads in fabric | | | Woven fabrics (as appropriate) | |
| | | a) Lengthwise | Number per centimetre Number per decimetre | | ends/cm ends/dm |
| | | b) Widthwise | Number per centimetre Number per decimetre | | picks/cm picks/dm |
| 8. | Warp threads in loom | Number per centimetre | ends/cm | Reeds | |
| 9. | Stitches in knitted fabric | | | Knitted fabrics (as appropriate) | |
| | | a) Lengthwise | Courses per centimetre Courses per decimetre | | courses/cm courses/dm |
| | | b) Widthwise | Wales per centimetre | | wales/cm |
| | | | Wales per decimetre | | wales/dm |

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| Sl. No. | CHARACTERISTIC | SI UNITS | | APPLICATION |
|---------|----------------------------------|---|-----------------------------------|--|
| | | Unit(s) | Abbreviation(s) | |
| (1) | (2) | (3) | (4) | (5) |
| 10. | Stitch length | Millimetre | mm | Knitted fabrics, made-up fabrics |
| 11. | Mass per unit area | Grams per square metre | g/m ² | Fabrics |
| 12. | Mass per unit length | Grams per metre | g/m | Fabrics |
| 13. | Twist | Turns per centimetre Turns per metre | turns/cm turns/m | Yarns, ropes (as appropriate) |
| 14. | Test or gauge length | Millimetre, centimetre | mm, cm | Fibres, yarns and fabric specimens (as appropriate) |
| 15. | Breaking load | Millinewton Newton | mN N | Fibres, delicate yarns (individual or skeins) Strong yarns (individual or skeins), ropes, cordages, fabrics |
| 16. | Breaking length | Kilometre | km | Yarns |
| 17. | Tenacity | Millinewton per tex | mN/tex | Fibres, yarns (individual or skeins) |
| 18. | Twist factor or twist multiplier | Turns per centimetre × square root of tex Turns per metre × square root of tex | turns/cm × √tex turns/m × √tex | Yarns (as appropriate) |
| 19. | Bursting strength | Newton per square centimetre | N/cm ² | Fabrics |
| 20. | Tear strength | Millinewton Newton | mN N | Fabrics (as appropriate) |
| 21. | Pile height | Millimetre | mm | Carpets |
| 22. | Pile density | Mass of pile yarn in grams per square metre per millimetre pile height | g/m ² /mm pile height | Pile carpets |
| 23. | Elastic modulus | Millinewton per tex per unit deformation | mN/tex/unit deformation | Fibres, yarns, strands |